CLAIMS

What is claimed is:

1. A method for quantification of strain imaging comprising the steps of:

   (a) performing a motion analysis on at least two selected regions of interest (ROI) before and after tissue compression;

   (b) providing a strain estimate for each of the at least two ROIs; and

   (c) comparing the strain estimates of each of the at least two ROIs to quantify the strain for the at least two ROIs.

2. The method of claim 1 wherein the performing step (a) comprises the steps of:

   (a1) generating a plurality of blocks for each of the at least two ROIs; and

   (a2) utilizing a block matching technique to perform a motion analysis on each of the at least two ROIs.

3. The method of claim 2 wherein each of the plurality of blocks touch a boundary of the at least two ROIs.

4. The method of claim 1 wherein the providing step (206) (b) is performed in accordance with the equation:

$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

where ST is the strain estimate; and where a_i and b_i are the displacement components for two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line, d_i is a

distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode image covering the ROI.

5.   A method for quantification of strain imaging comprising the steps of:

(a)   performing (206) a motion analysis on a plurality of selected regions of interest (ROIs) (302 and 304; the performing step (a) further comprises the steps of: (a1) generating a plurality of blocks (150) for each of the at least two ROIs (302 and 304); and (a2) utilizing a block matching technique to perform a motion analysis on each of the plurality of ROIs (302 and 304), wherein each of the plurality of blocks (150) touch a boundary of the at least two ROIs (302 and 304);

(b)   providing a strain estimate for each of the plurality of ROIs (302 and 304; and

(c)   comparing (208) the strain estimates of each of the plurality of ROIs to quantify the strain for the at least two ROIs (302 and 304).

6.   The method of claim 5 where the strain estimate is performed in accordance with the equation:

$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

where ST is the strain estimate; and where a_i and b_i are the displacement components for two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line. d_i is a distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode image covering that specific ROI.

7.   A computer readable medium for quantification of strain imaging including program instructions for:

(a)   performing (204) a motion analysis on at least two selected regions of interest (ROI) before and after tissue compression;

(b)   providing (206) a strain estimate for each of the at least two ROIs; and

(c)   comparing (208) the strain estimates of each of the at least two ROIs to quantify the strain for the at least two ROIs.

8.   The computer readable medium of claim 7 wherein the performing (206) step (a) comprises the steps of:

(a1)   generating a plurality of blocks (150) for each of the at least two ROIs (302 and 304); and

(a2)   utilizing a block matching technique to perform a motion analysis on each of the at least two ROIs (302 and 304).

9.   The computer readable medium of claim 7 wherein each of the plurality of blocks touch a boundary of the at least two ROIs (302 and 304).

10.   The computer readable medium of claim 7 wherein the providing step (206) (b) is performed in accordance with the equation:

$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

where ST is the strain estimate; and where a_i and b_i are the displacement components for two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line, d_i is a distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode image covering that specific ROI.

11.   A computer readable medium for quantification of strain imaging having program instructions for:

(a)   performing (206) a motion analysis on a plurality of selected regions of interest (ROIs) (302 and 304); the performing step (a) further comprises the steps of: (a1) generating a plurality of blocks (150) for each of the plurality of ROI s(302 and 304);

(a2)   utilizing a block matching technique to perform a motion analysis on each of the plurality of ROIs (302 and 304), wherein each of the plurality of blocks touch a boundary of the

plurality of ROIs (302 and 304) ;

(b)   providing (206) a strain estimate for each of the plurality of ROIs; and

comparing (208) the strain estimates of each of the plurality of ROIs to quantify the strain for the at least two ROIs (302 and 304).

12.   The computer readable medium of claim 11 where the strain estimate is performed in accordance with the equation:

$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

where ST is the strain estimate; and where a_i and b_i are the displacement components for two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line. d_i is a distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode image covering that specific ROI.